

**REMARKS**

Claims 37, 38 and 40 are amended. Claims 37-38, 40 and 42-51 are pending in the application.

Claims 37-38, 40 and 42-51 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over a combination of "Development of a submicrometer-grained microstructure in Al6061" (*Development*); Park, U.S. Patent No. 4,589,932; and Dunlop, U.S. Patent No. 5,590,398; as further combined with "Metals Handbook" 8<sup>th</sup> Edition, Vol. 1, pp. 15 and 18; or "Stress-Relief Heat Treating of Steel" (*Stress-Relief*). The Examiner is reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Claims 37-38, 40 and 42-51 are allowable over the various cited combinations of *Development*, Park, Dunlop, Metals Handbook and *Stress-Relief* for at least the reason that the references, individually or as combined, fail to disclose or suggest each and every limitation in any of those claims.

As amended, independent claim 37 recites providing a cast material and performing a preliminary treatment, where the preliminary treatment comprises performing a first treatment including subjecting the cast material to homogenizing, after the first treatment cooling the homogenized material to a forging temperature, hot forging the material to produce a disc and performing a solutionizing treatment, and where the preliminary treatment utilizes a single heating of the cast material. Claim 37 additionally recites after the preliminary treatment, subjecting the alloy to a predetermined number of passes

through routes of equal channel angular extrusion (ECAE). The amendment to claim 37 is supported by the specification at, for example, page 7, lines 16-30; and page 6, line 31 through page 7, line 9. Not one of the cited references or any combination thereof, suggests the claim 37 recited combination of homogenizing followed by cooling and subsequently forging to produce a disc, and performing a solutionizing treatment followed by equal channel angular extrusion. Accordingly, independent claim 37 is not rendered obvious by *Development*, Park, Dunlop, Metals Handbook and *Stress-Relief* and is allowable over these references.

Dependent claims 42-49 are allowable over the various cited combinations of Dunlop, Park, *Development*, Metals Handbook and *Stress-Relief* for at least the reason that they depend from allowable base claim 37.

As amended, independent claim 38 recites providing a cast material in the form of an ingot having an initial height to diameter ratio, performing a preliminary treatment comprising subjecting the cast material to homogenizing followed by hot forging to reduce the height to diameter ratio, and subsequent solutionizing. Claim 38 further recites after performing the preliminary treatment and without aging the alloy, processing the alloy through equal channel angular extrusion. The amendment to claim 38 is supported by the specification at, for example, page 6, lines 18-30. *Development* specifically indicates that billets are subjected to aging treatments prior to equal channel angular extrusion (section 2, page 1254). Park also indicates aging and does not disclose or suggest utilization of equal channel angular extrusion. Accordingly, as combined with *Development*, Park does not contribute toward suggesting the claim 38 recited combination of reducing a height to diameter ratio of the billet by hot forging, subsequently solutionizing, and without aging the

alloy, processing the alloy through equal channel angular extrusion. Not one of the additionally cited references contributes toward suggesting the claim 38 recited reduction of a height to diameter ratio, subsequent solutionizing and without aging the alloy, processing the alloy through at least one route of equal channel angular extrusion. Accordingly, independent claim 38 is not rendered obvious by the various cited combinations of *Development*, Park, Dunlop, Metals Handbook and *Stress-Relief* and is allowable over these references.

As amended, independent claim 40 recites treating a cast material by homogenization, hot forging to produce a disc, solutionizing, removing portions of the disc to produce a billet, and processing the billet by performing at least one pass through equal channel angular extrusion. Independent claim 40 is allowable over *Development*, Park, Dunlop, Metals Handbook and *Stress-Relief* for at least reasons similar to those discussed above with respect to independent claim 37.

Dependent claims 50 and 51 are allowable over *Development*, Park, Dunlop, Metals Handbook and *Stress-Relief* for at least the reason that they depend from allowable base claim 40.

For the reasons discussed above claims 37-38, 40 and 42-51 are allowable. Accordingly, applicant respectfully requests formal allowance of such pending claims in the Examiner's next action.

Respectfully submitted,

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